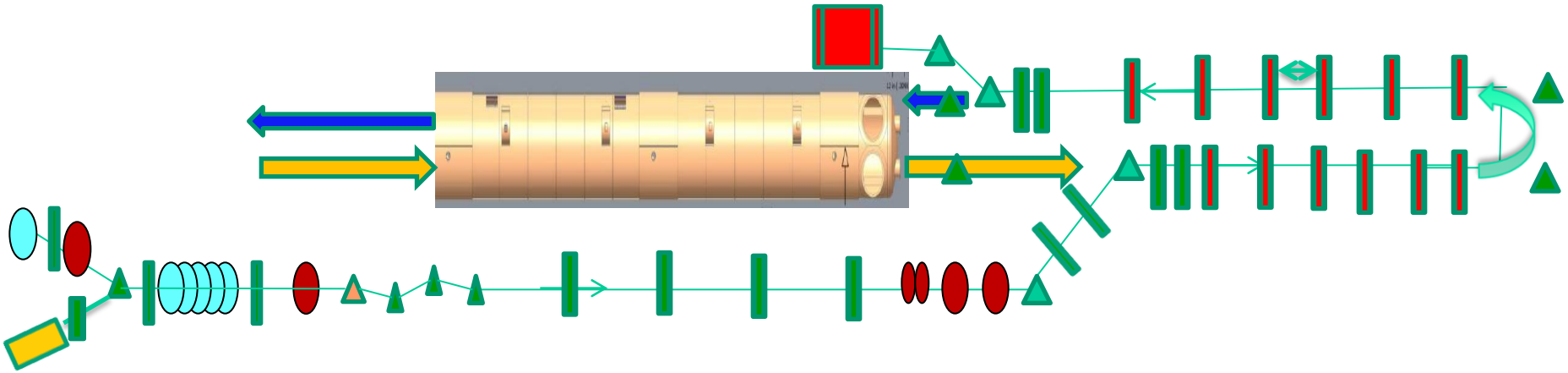
1. J. Tuozzolo will schedule a visit to NSLS next week to evaluate available magnets, power supplies, etc.
2. Comment during presentation of attached slides:

- Beam line design near Triplet magnet. G. Whitbeck needs details in this area to develop the design.
  - M. Mapes said the a shorter bellows may be used since there as other short bellows in the cooling section. Also, the conical adapter could be a part of the dipole chamber.
  - There will still be an ion pump cross at this location.
  - The existing BPM at the DX magnet will be used. D. Gassner to provide detail drawing to G. Whitbeck.
- Compensation Solenoids (Low Field)
  - A. Fedotov said that field ($\int B^2 dz$) of current design is not adequate for focusing. The magnet may need increased current density or physical size (large OD) to achieve slightly higher field. W. Meng and G. Mahler to resolve when field is determined (A. Fedotov to provide).

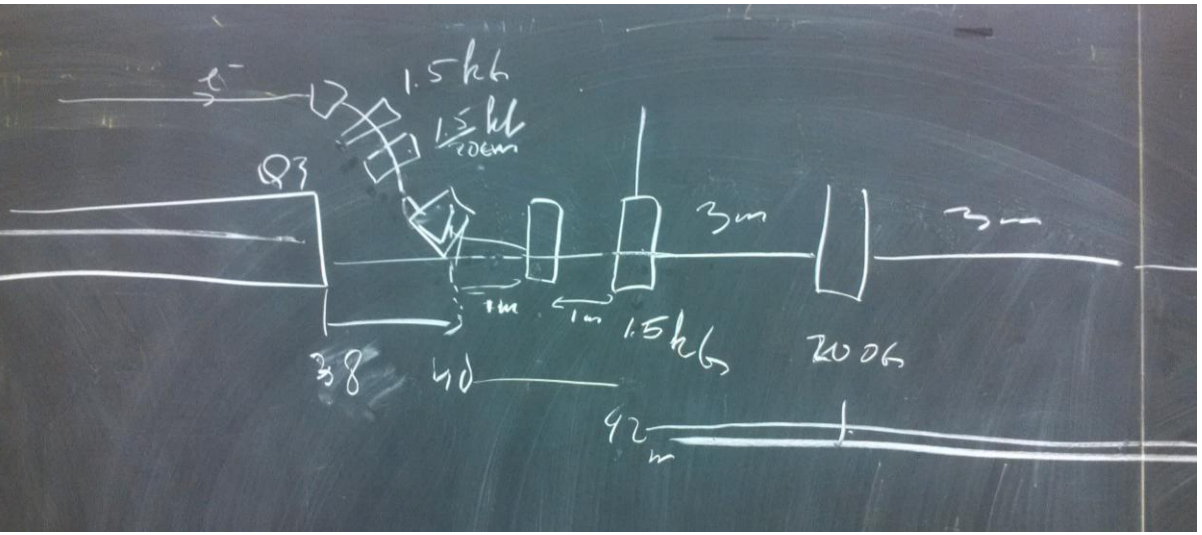
- Matching (High Field) Solenoids - 1.5 kG
  - There will be no bucking coils in the these solenoids
  - HF Solenoids need correctors (100 g-cm)
- BPM
  - A single BPM is needed for pair of matching solenoids
- Profile Monitor
  - G. Whitlock to get PM drawing from Sal P. The LEReC PM will be similar with larger YAG screen – 40 mm (T. Miller).
- Beam Dump
  - Beam dump to be 60 kW. In order to include this beam dump the beam line must be modified considerably from that currently shown. The future use of the ERL beam dump is unlikely.

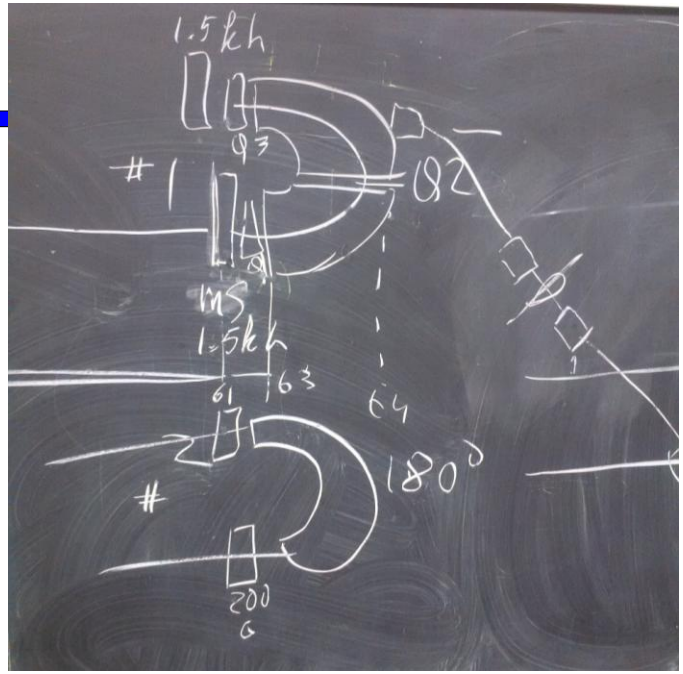
  Note: Per email - G. Mahler on 11/13/14: “If we are considering cutting the transport line back and dumping locally, we should flip the layout.” See attached sheet.

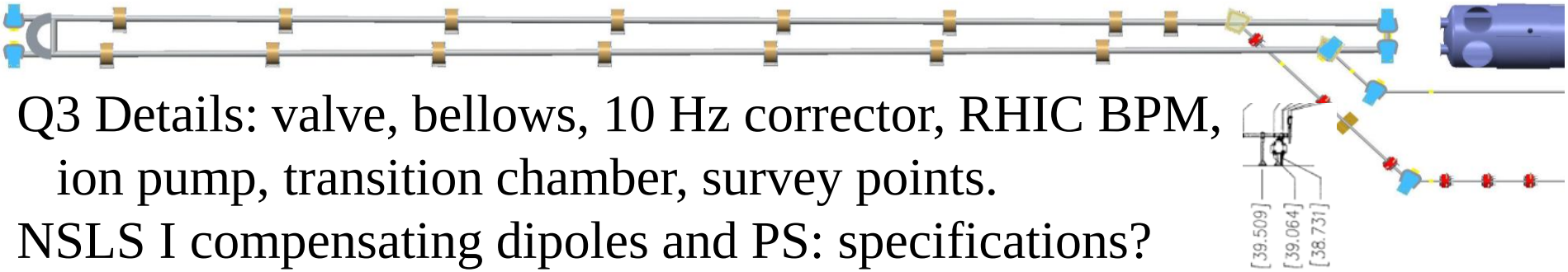
Push pull ERL approach: possible new baseline



Revised Cooling Section







Q3 Details: valve, bellows, 10 Hz corrector, RHIC BPM, ion pump, transition chamber, survey points.

NSLS I compensating dipoles and PS: specifications?

Magnet	Designation	Location	Aperture Gap cm	Width cm	Aperture cm	Core Length cm	Operating Field kG	Qty	Grad. T/m	Main Power Supply Qty	Current Amps	Power kW	Trim Power Supply Qty	Current Amps	Power kW
Solenoid - Compensating	16S16	Cooling section (2 meter spacing)	N/A	N/A	16	16	0.20	16	N/A	16			0		
Solenoid - Matching Cool Sec	16S16	Cooling section (2 meter spacing)	N/A	N/A	16	16	1.50	8	N/A	8			0		
H & V Corrector Coil (0.2mrad)	16C16S	Cooling section compensating solenoids	16	16	N/A	coil in S	10 Gcm	16	N/A	0			32		
H & V Correctors (3mrad)	16C16	Cooling section	16	16	N/A	10	100 Gcm	4	N/A	0			8		

Compensating Solenoids

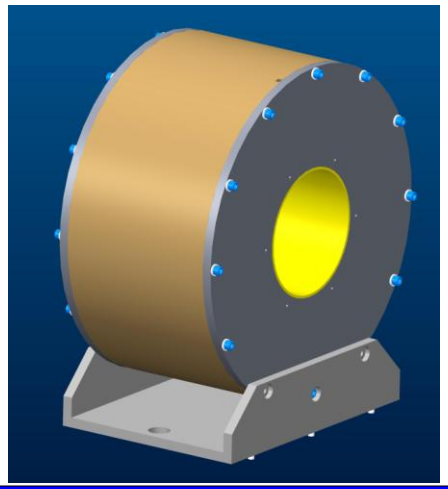
1. Compensating Solenoid: Presently based on W. Meng's design for 0.20kG with bucking coils.
2. Compensating Solenoid : The separate leads for the bucking solenoid coils and the main solenoid coil on the magnet assembly terminal block.
3. Compensating Solenoid Power Supplies: It has not been determined whether each solenoid will require 1, 2, or 3 power supplies.
4. Spacing: Compensating solenoids will be spaced 3 meters apart.

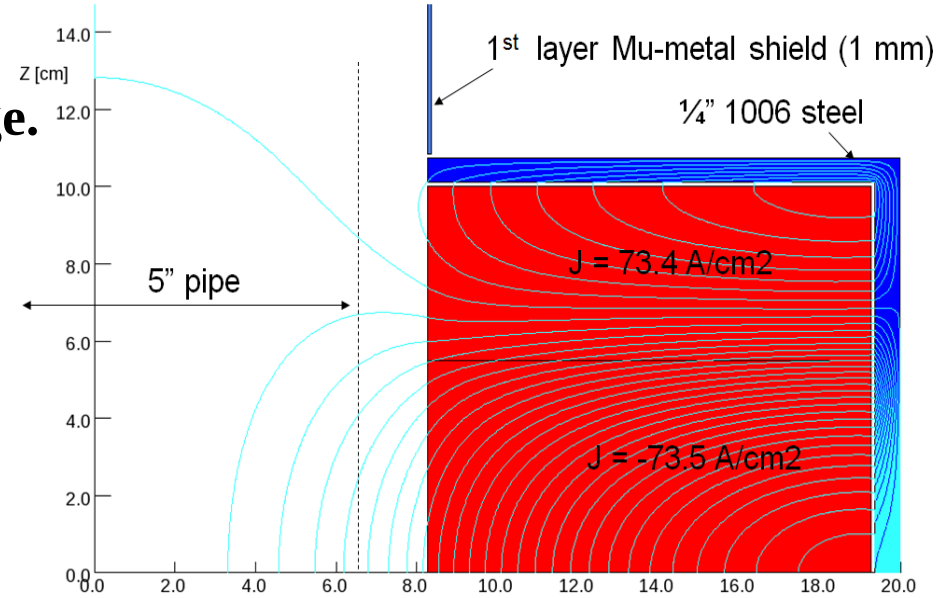
What is the Int(Bz)dz for the 5 MeV case which you used?**

My estimate that we would need maximum: 3e5 Gauss^2cm

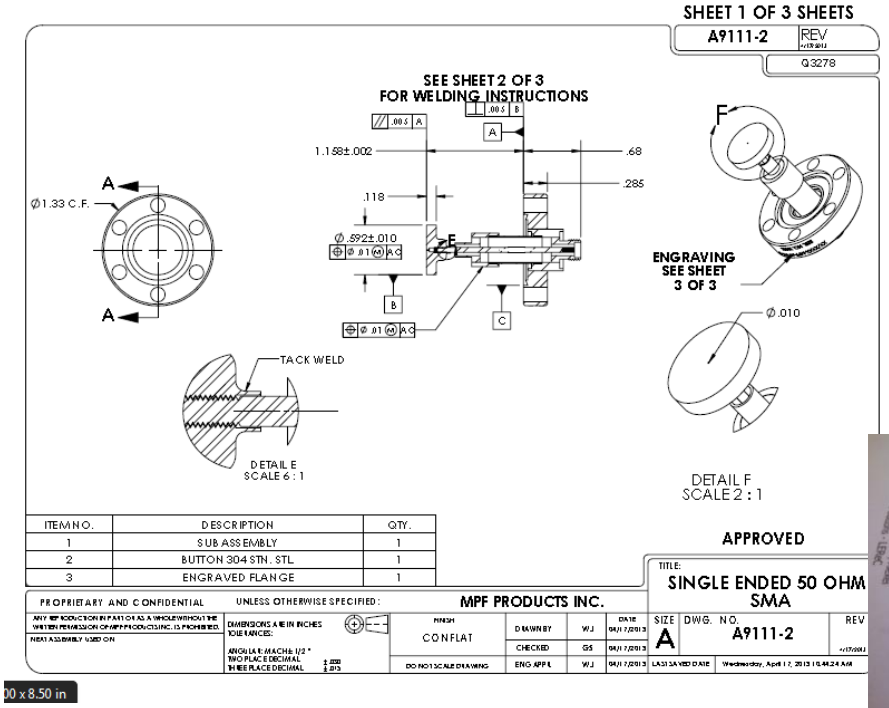
Wuzheng has 3.4e5 for the full integral which seems sufficient.

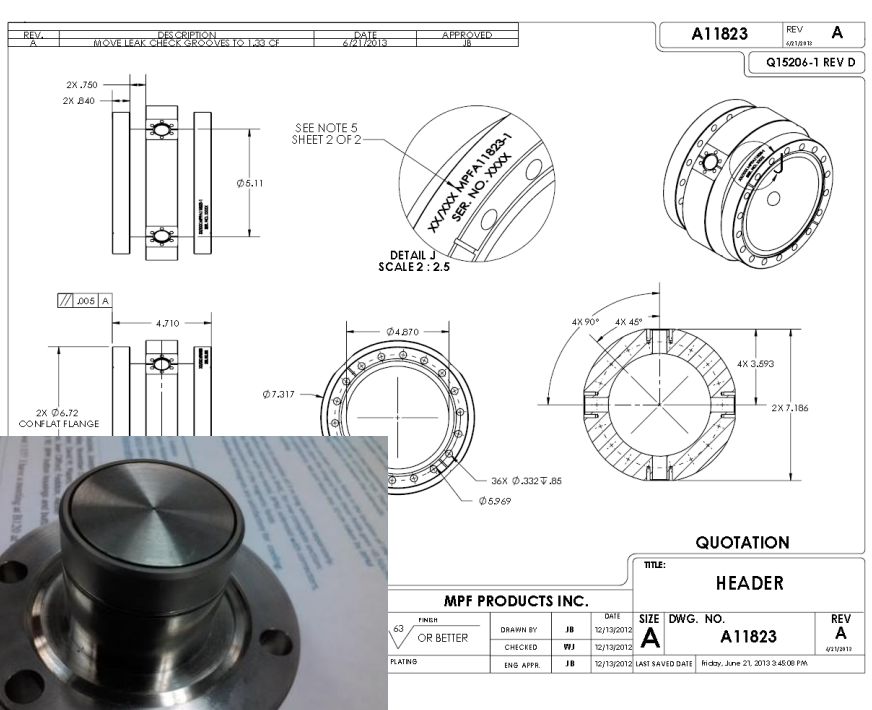
- **Complete SCD's, SOW, Specification.**
- **Layout BPM, Bellows, Chamber Flange.**





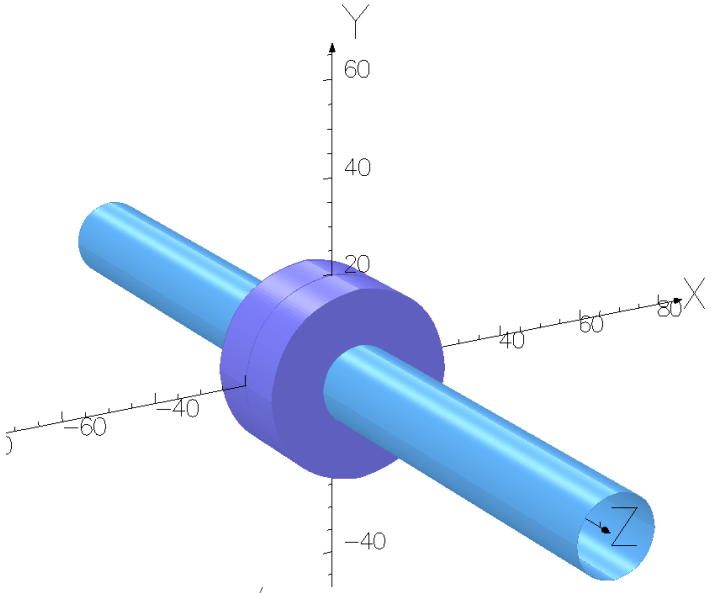
Cooling Section BPM's

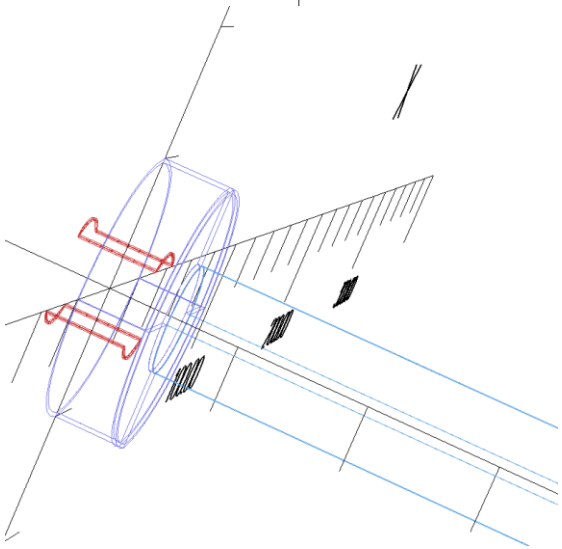




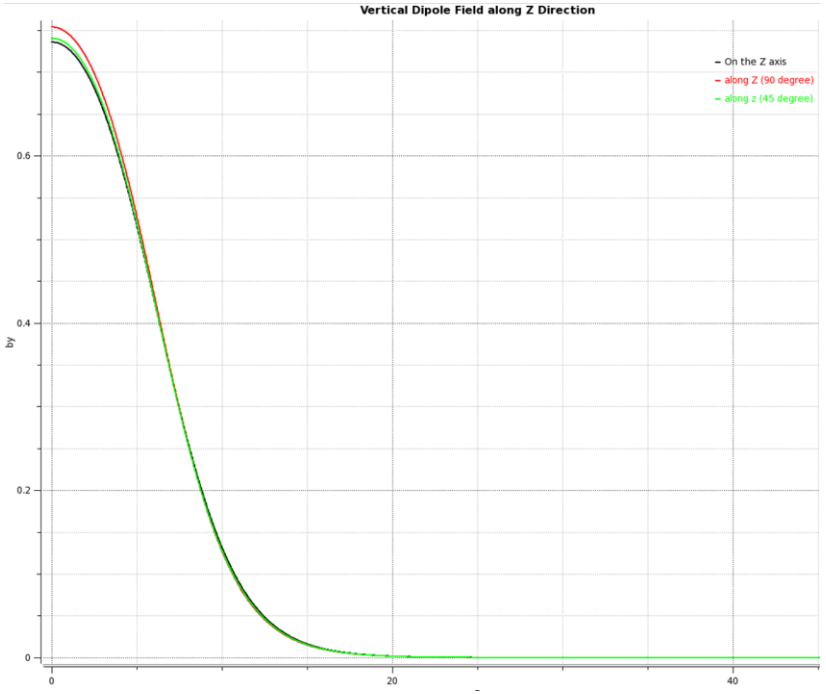
- Phone conference with MPF
- Larger diameter buttons on pick-up – 27 to 30 mm diameter
- Machined vacuum chamber, 304L, no threaded holes on flanges.
- Button hole size TBD microwave studio (D. Gassner).

Compensating Solenoid Corrector





Dipole correction 10.24 A-T
Per coil; Straight section
Half-length: H1=6 cm
13 turns/.8 amps = 1 amp PS
(AWG #18 = 0.98 A/mm2)



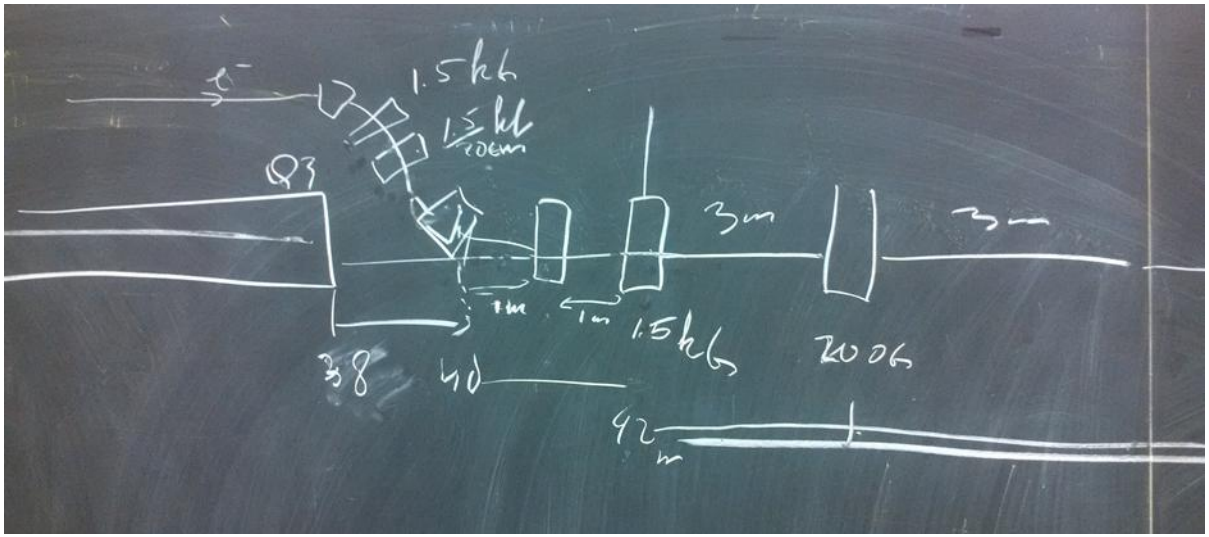
Magnet Analysis

Matching Solenoid w/corrector

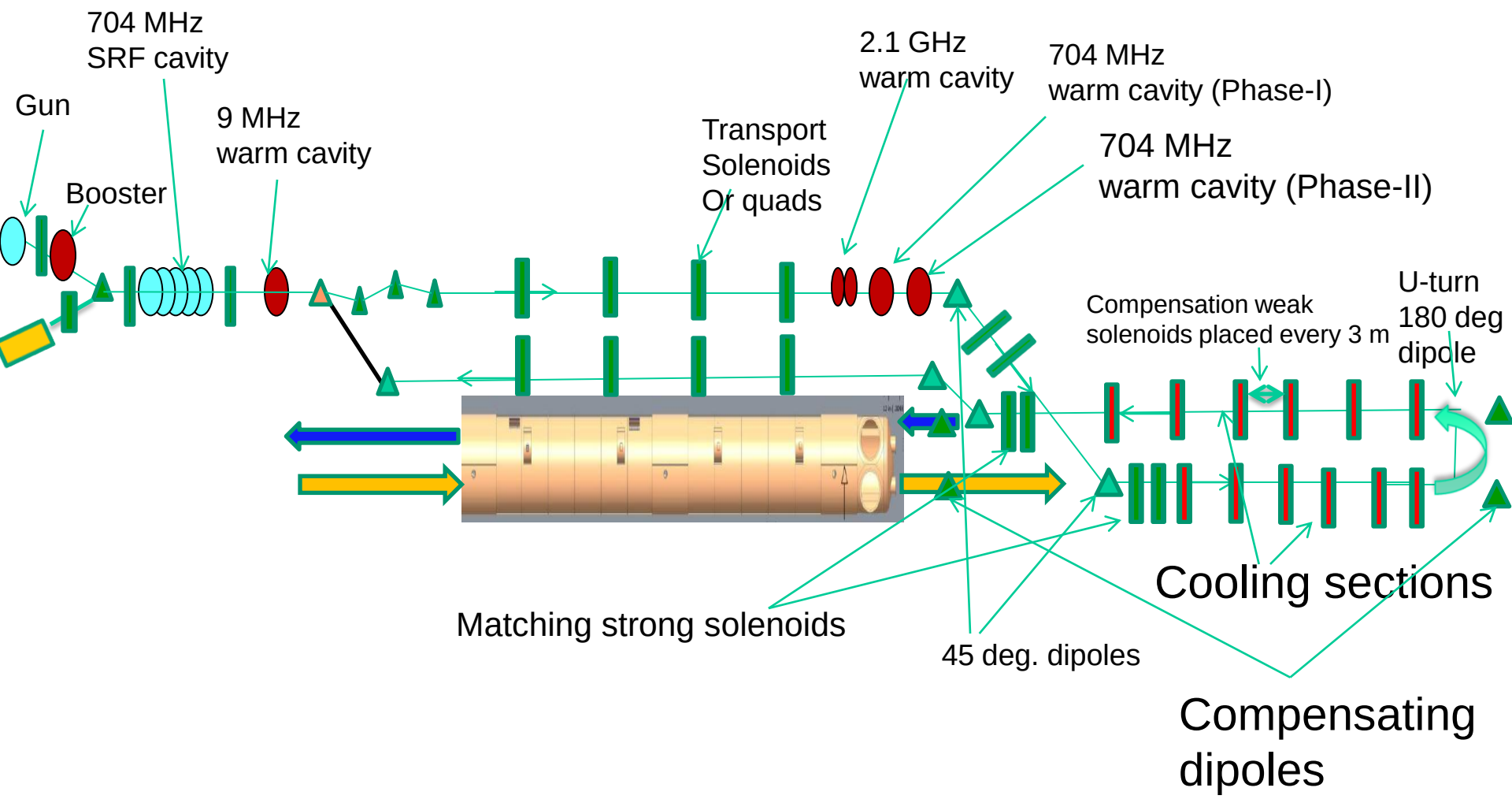
- 1.5 kG, magnetic length??
- Water cooled
- 2 required in cooling section w/bucking coil

(Need to look at alternatives to bucking coil: adjacent low field solenoid?)

- 2 required in cooling section w/o bucking coil
- Corrector 100 Gcm, present specification.

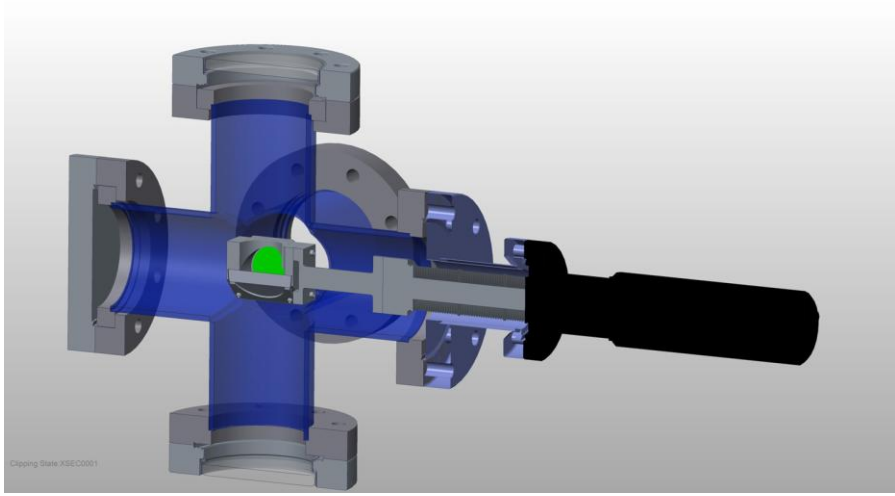


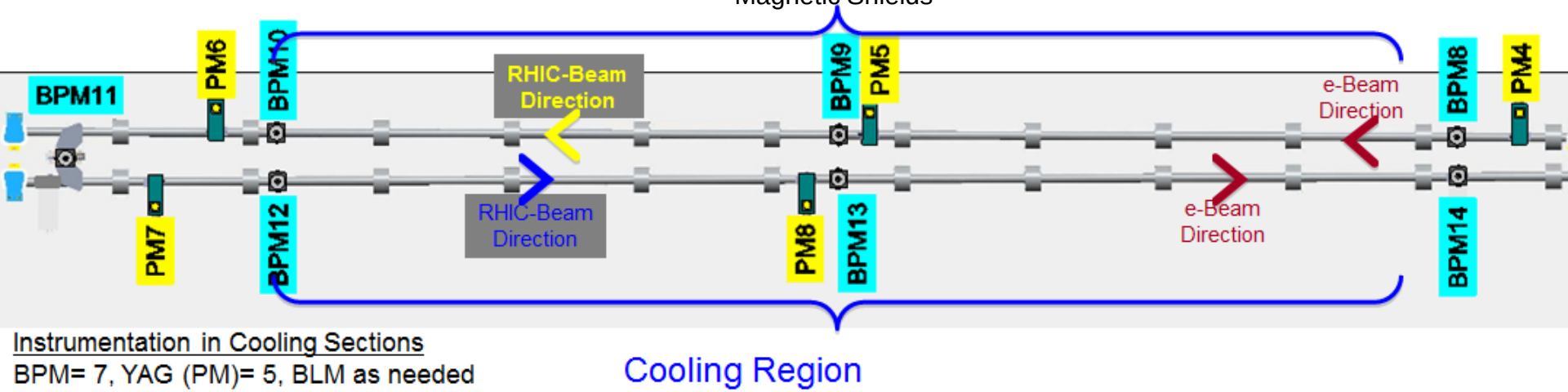
Push pull ERL approach: possible new baseline



Vacuum Chamber/System Requirements:

- 5” (12.7 cm) OD vacuum chamber, bake-out temperature.
- 4.87 ID button BPM (from CeC)
- No ion pump tees in the cooling section.
- One RHIC shielded bellows per solenoid
- Transitions to 10 cm aperture dipole magnets.
- Dipole magnet vacuum chambers.
- 6 Profile Monitors, screen size??





Instrumentation in Cooling Sections
BPM= 7, YAG (PM)= 5, BLM as needed

Cooling Region